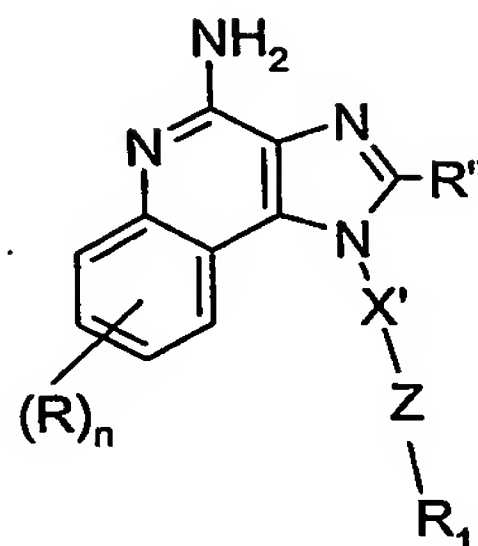


## WHAT IS CLAIMED IS:

1. A compound of the formula (I):



(I)

wherein:

Z is -CH=CH- or -C≡C-;

X' is -CH(R<sub>3</sub>)-, -CH(R<sub>3</sub>)-alkylene-, or -CH(R<sub>3</sub>)-alkenylene-;

R<sub>1</sub> is selected from the group consisting of:

-Ar,

-Ar'-Y-R<sub>4</sub>,

-Ar'-X-Y-R<sub>4</sub>; and

-Ar'-R<sub>5</sub>;

Ar is selected from the group consisting of aryl and heteroaryl both of which can be unsubstituted or can be substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, hydroxyalkyl, mercapto, cyano, carboxy, formyl, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, heterocyclylalkylenyl, amino, alkylamino, and dialkylamino;

Ar' is selected from the group consisting of arylene and heteroarylene both of which can be unsubstituted or can be substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, hydroxyalkyl, mercapto, cyano, carboxy, formyl, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, heterocyclylalkylenyl, amino, alkylamino, and dialkylamino;

X is selected from the group consisting of alkylene, alkenylene, alkynylene, arylene, heteroarylene, and heterocyclylene wherein the alkylene, alkenylene, and alkynylene groups can be optionally interrupted or terminated with arylene, heteroarylene, or heterocyclylene, and wherein the alkylene, alkenylene, and alkynylene groups can be optionally interrupted by one or more -O- groups;

Y is selected from the group consisting of

-S(O)<sub>0-2</sub>-,

-S(O)<sub>2</sub>-N(R<sub>8</sub>)-,

-C(R<sub>6</sub>)-,

-C(R<sub>6</sub>)-O-,

-O-C(R<sub>6</sub>)-,

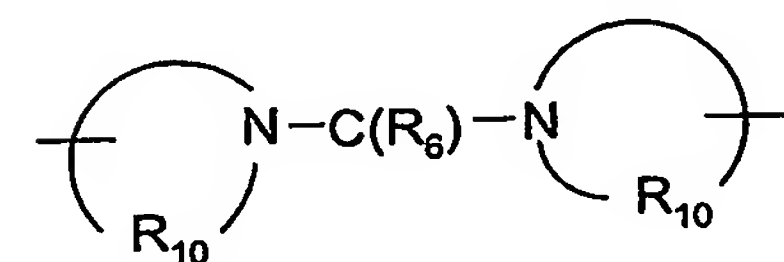
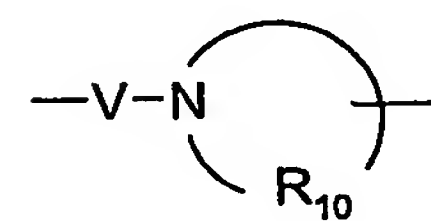
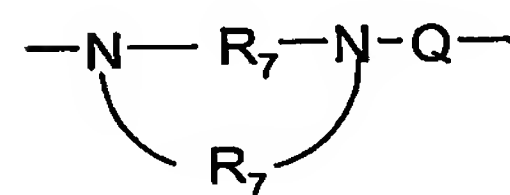
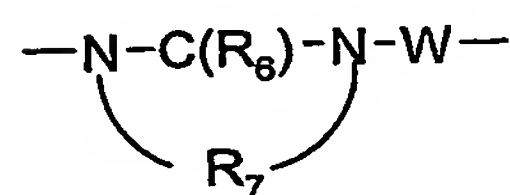
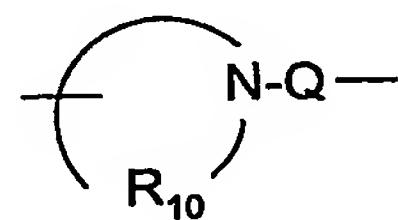
-O-C(O)-O-,

-N(R<sub>8</sub>)-Q-,

-C(R<sub>6</sub>)-N(R<sub>8</sub>)-,

-O-C(R<sub>6</sub>)-N(R<sub>8</sub>)-,

-C(R<sub>6</sub>)-N(OR<sub>9</sub>)-,

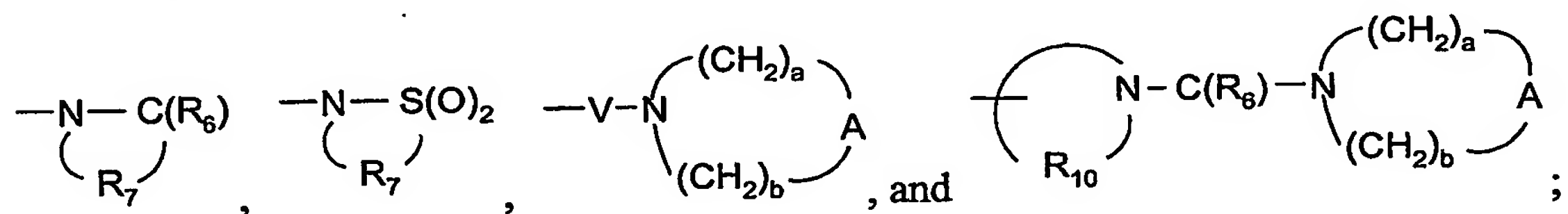


R<sub>3</sub> is hydrogen or C<sub>1-10</sub> alkyl;

R<sub>4</sub> is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, aryl, arylalkylenyl, aryloxyalkylenyl, alkylarylenyl, heteroaryl, heteroarylalkylenyl,

heteroaryloxyalkylenyl, alkylheteroarylenyl, and heterocyclyl, wherein the alkyl, alkenyl, alkynyl, aryl, arylalkylenyl, aryloxyalkylenyl, alkylarylenyl, heteroaryl, heteroarylalkylenyl, heteroaryloxyalkylenyl, alkylheteroarylenyl, and heterocyclyl groups can be unsubstituted or substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, hydroxyalkyl, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, mercapto, cyano, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, amino, alkylamino, dialkylamino, (dialkylamino)alkyleneoxy, and in the case of alkyl, alkenyl, alkynyl, and heterocyclyl, oxo;

10  $R_5$  is selected from the group consisting of



$R_6$  is selected from the group consisting of =O and =S;

$R_7$  is  $C_{2-7}$  alkylene;

$R_8$  is selected from the group consisting of hydrogen, alkyl, alkoxyalkylenyl, and arylalkylenyl;

$R_9$  is selected from the group consisting of hydrogen and alkyl;

$R_{10}$  is  $C_{3-8}$  alkylene;

A is selected from the group consisting of -O-, -C(O)-, -S(O)<sub>0-2</sub>-, -CH<sub>2</sub>-, and -N(R<sub>4</sub>)-

20 Q is selected from the group consisting of a bond, -C(R<sub>6</sub>)-, -C(R<sub>6</sub>)-C(R<sub>6</sub>)-, -S(O)<sub>2</sub>-, -C(R<sub>6</sub>)-N(R<sub>8</sub>)-W-, -S(O)<sub>2</sub>-N(R<sub>8</sub>)-, -C(R<sub>6</sub>)-O-, and -C(R<sub>6</sub>)-N(OR<sub>9</sub>)-

V is selected from the group consisting of -C(R<sub>6</sub>)-, -O-C(R<sub>6</sub>)-, -N(R<sub>8</sub>)-C(R<sub>6</sub>)-, and -S(O)<sub>2</sub>-;

W is selected from the group consisting of a bond, -C(O)-, and -S(O)<sub>2</sub>-;

25 a and b are independently integers from 1 to 6 with the proviso that  $a + b \leq 7$ ;

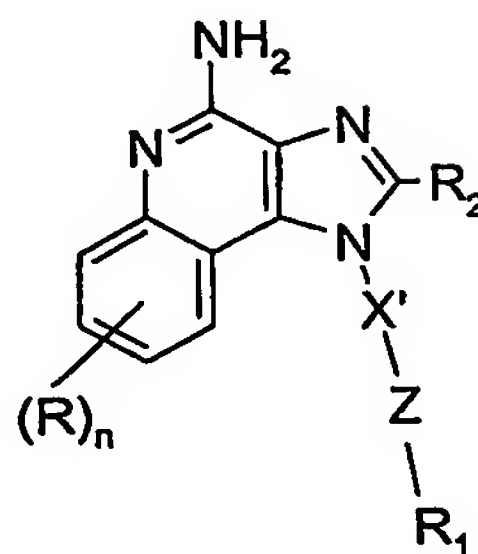
R is selected from the group consisting of alkyl, alkoxy, hydroxy, halogen, and trifluoromethyl; and

n is 0 or 1;

R" is hydrogen or a non-interfering substituent;

or a pharmaceutically acceptable salt thereof.

2. A compound of the formula (II):



(II)

wherein:

Z is -CH=CH- or -C≡C-;

X' is -CH(R<sub>3</sub>)-, -CH(R<sub>3</sub>)-alkylene-, or -CH(R<sub>3</sub>)-alkenylene-;

R<sub>1</sub> is selected from the group consisting of:

-Ar,

-Ar'-Y-R<sub>4</sub>,

-Ar'-X-Y-R<sub>4</sub>, and

-Ar'-R<sub>5</sub>;

Ar is selected from the group consisting of aryl and heteroaryl both of which can be unsubstituted or can be substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, hydroxyalkyl, mercapto, cyano, carboxy, formyl, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, heterocyclylalkylenyl, amino, alkylamino, and dialkylamino;

Ar' is selected from the group consisting of arylene and heteroarylene both of which can be unsubstituted or can be substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, hydroxyalkyl, mercapto, cyano, carboxy, formyl, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, heterocyclylalkylenyl, amino, alkylamino, and dialkylamino;

R<sub>2</sub> is selected from the group consisting of:

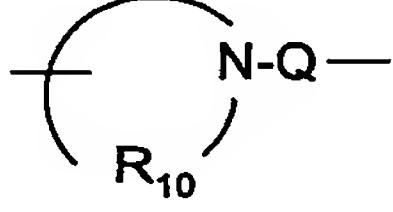
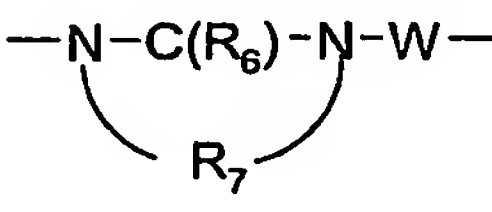
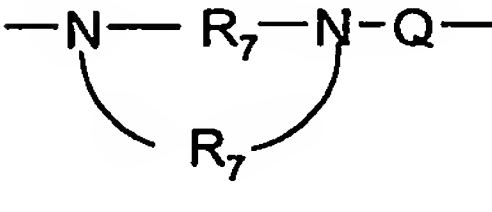
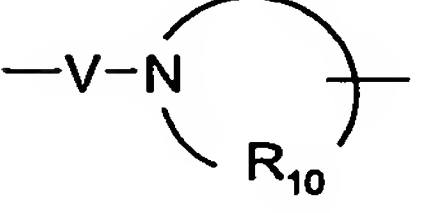
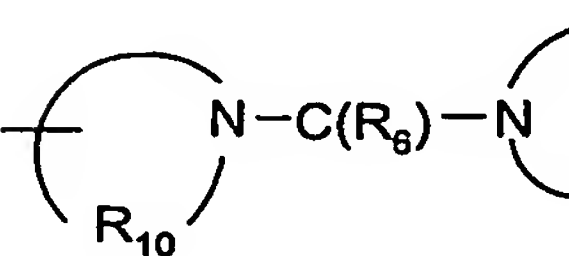
-R<sub>4</sub>,

-X-R<sub>4</sub>,  
 -X-Y-R<sub>4</sub>, and  
 -X-R<sub>5</sub>;

5 X is selected from the group consisting of alkylene, alkenylene, alkynylene, arylene, heteroarylene, and heterocyclylene wherein the alkylene, alkenylene, and alkynylene groups can be optionally interrupted or terminated with arylene, heteroarylene, or heterocyclylene, and wherein the alkylene, alkenylene, and alkynylene groups can be optionally interrupted by one or more -O- groups;

Y is selected from the group consisting of:

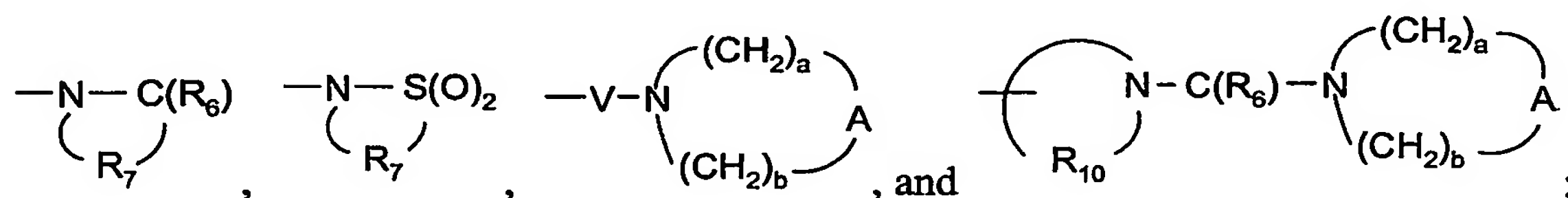
10 -S(O)<sub>0-2</sub>-,  
 -S(O)<sub>2</sub>-N(R<sub>8</sub>)-,  
 -C(R<sub>6</sub>)-,  
 -C(R<sub>6</sub>)-O-,  
 -O-C(R<sub>6</sub>)-,  
 15 -O-C(O)-O-,  
 -N(R<sub>8</sub>)-Q-,  
 -C(R<sub>6</sub>)-N(R<sub>8</sub>)-,  
 -O-C(R<sub>6</sub>)-N(R<sub>8</sub>)-,  
 -C(R<sub>6</sub>)-N(OR<sub>9</sub>)-,

20 ,  
,  
,  
, and  
 ;

$R_3$  is hydrogen or  $C_{1-10}$  alkyl;

$R_4$  is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, aryl, arylalkylenyl, aryloxyalkylenyl, alkylarylenyl, heteroaryl, heteroarylalkylenyl, heteroaryloxyalkylenyl, alkylheteroarylenyl, and heterocyclyl, wherein the alkyl, alkenyl, alkynyl, aryl, arylalkylenyl, aryloxyalkylenyl, alkylarylenyl, heteroaryl, heteroarylalkylenyl, heteroaryloxyalkylenyl, alkylheteroarylenyl, and heterocyclyl groups can be unsubstituted or substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, hydroxyalkyl, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, mercapto, cyano, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, amino, alkylamino, dialkylamino, (dialkylamino)alkyleneoxy, and in the case of alkyl, alkenyl, alkynyl, and heterocyclyl, oxo;

$R_5$  is selected from the group consisting of



$R_6$  is selected from the group consisting of =O and =S;

$R_7$  is  $C_{2-7}$  alkylene;

$R_8$  is selected from the group consisting of hydrogen, alkyl, alkoxyalkylenyl, and arylalkylenyl;

$R_9$  is selected from the group consisting of hydrogen and alkyl;

$R_{10}$  is  $C_{3-8}$  alkylene;

A is selected from the group consisting of -O-, -C(O)-, -S(O)<sub>0-2</sub>-, -CH<sub>2</sub>- and -N( $R_4$ )-;

Q is selected from the group consisting of a bond, -C( $R_6$ )-, -C( $R_6$ )-C( $R_6$ )-, -S(O)<sub>2</sub>-, -C( $R_6$ )-N( $R_8$ )-W-, -S(O)<sub>2</sub>-N( $R_8$ )-, -C( $R_6$ )-O-, and -C( $R_6$ )-N(OR<sub>9</sub>)-;

V is selected from the group consisting of -C( $R_6$ )-, -O-C( $R_6$ )-, -N( $R_8$ )-C( $R_6$ )-, and -S(O)<sub>2</sub>-;

W is selected from the group consisting of a bond, -C(O)-, and -S(O)<sub>2</sub>-;

a and b are independently integers from 1 to 6 with the proviso that  $a + b$  is  $\leq 7$ ;

R is selected from the group consisting of alkyl, alkoxy, hydroxy, halogen, and trifluoromethyl; and

n is 0 or 1;

or a pharmaceutically acceptable salt thereof.

3. The compound or salt of claim 2 wherein  $R_2$  is hydrogen, alkyl, or  
5 alkoxyalkylenyl.

4. The compound or salt of claim 3 wherein  $R_2$  is methyl, ethyl, propyl, butyl,  
2-methoxyethyl, or ethoxymethyl.

10 5. The compound or salt of any one of claims 1 through 4 wherein  $X'$  is  
-CH<sub>2</sub>-C(CH<sub>3</sub>)<sub>2</sub>-, methylene, or propylene.

6. The compound or salt of any one of claims 1 through 4 wherein  $X'$  is -CH<sub>2</sub>-, -  
15 (CH<sub>2</sub>)<sub>2</sub>-, or -(CH<sub>2</sub>)<sub>3</sub>-.

7. The compound or salt of any one of claims 1 through 6 wherein  $R_1$  is -Ar.

8. The compound or salt of claim 7 wherein  $R_1$  is selected from the group consisting  
of 2-pyridinyl, 3-pyridinyl, and phenyl wherein the phenyl group can be unsubstituted or  
20 substituted by alkoxy, haloalkyl, halogen, nitro, or cyano.

9. The compound or salt of claim 8 wherein  $R_1$  is phenyl, 3-chlorophenyl, 4-  
chlorophenyl, 3-fluorophenyl, 4-fluorophenyl, 3-methoxyphenyl, 4-methoxyphenyl, 3-  
trifluoromethylphenyl, 4-trifluoromethylphenyl, 2-pyridinyl, or 3-pyridinyl.

25 10. The compound or salt of any one of claims 1 through 9 wherein n is 0.

11. The compound or salt of any one of claims 1 through 10 wherein Z is -C $\equiv$ C-.

30 12. The compound or salt of any one of claims 1 through 10 wherein Z is -CH=CH-.

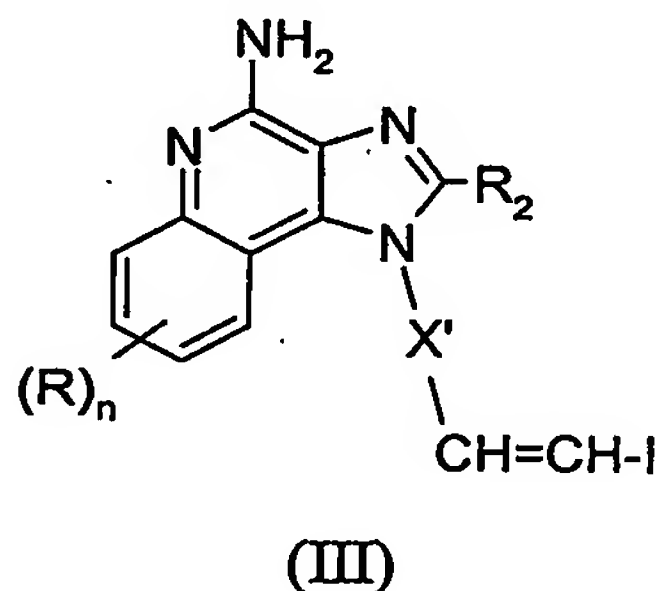
13. A pharmaceutical composition comprising a therapeutically effective amount of a compound or salt of any one of claims 1 through 12 in combination with a pharmaceutically acceptable carrier.

14. A method of inducing cytokine biosynthesis in an animal comprising administering an effective amount of a compound or salt of any one of claims 1 through 12 or a pharmaceutical composition of claim 13 to the animal.

15. A method of treating a viral disease in an animal in need thereof comprising administering an effective amount of a compound or salt of any one of claims 1 through 12 or a pharmaceutical composition of claim 13 to the animal.

16. A method of treating a neoplastic disease in an animal in need thereof comprising administering a therapeutically effective amount of a compound or salt of any one of claims 1 through 12 or a pharmaceutical composition of claim 13 to the animal.

17. A compound of the formula (III):



wherein:

X' is -CH(R<sub>3</sub>)-, -CH(R<sub>3</sub>)-alkylene-, or -CH(R<sub>3</sub>)-alkenylene-;

R<sub>2</sub> is selected from the group consisting of:

-R<sub>4</sub>,

-X-R<sub>4</sub>,

-X-Y-R<sub>4</sub>, and

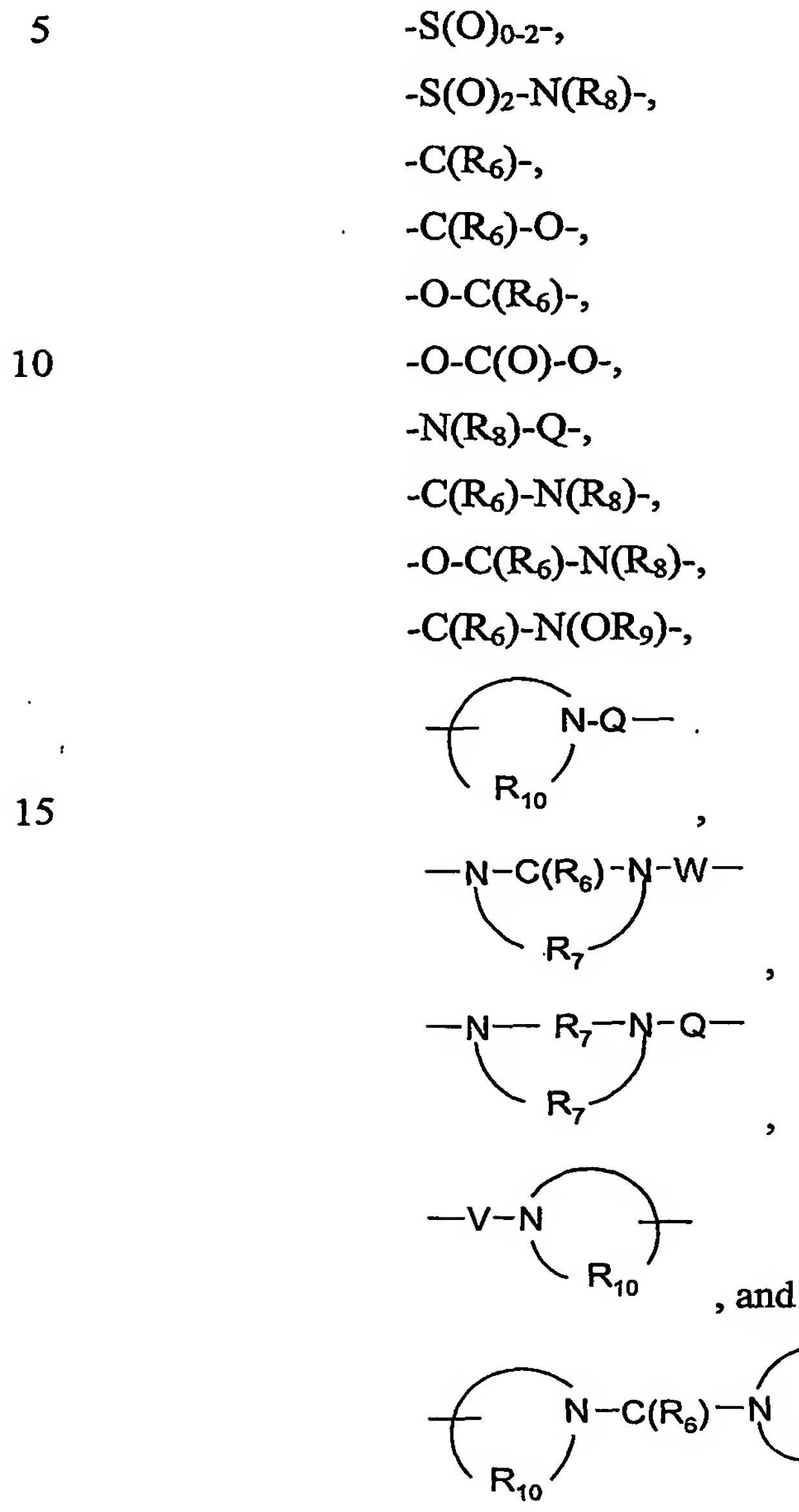
-X-R<sub>5</sub>;

X is selected from the group consisting of alkylene, alkenylene, alkynylene, arylene, heteroarylene, and heterocyclylene wherein the alkylene, alkenylene, and



alkynylene groups can be optionally interrupted or terminated with arylene, heteroarylene, or heterocyclylene, and wherein the alkylene, alkenylene, and alkynylene groups can be optionally interrupted by one or more -O- groups;

Y is selected from the group consisting of:

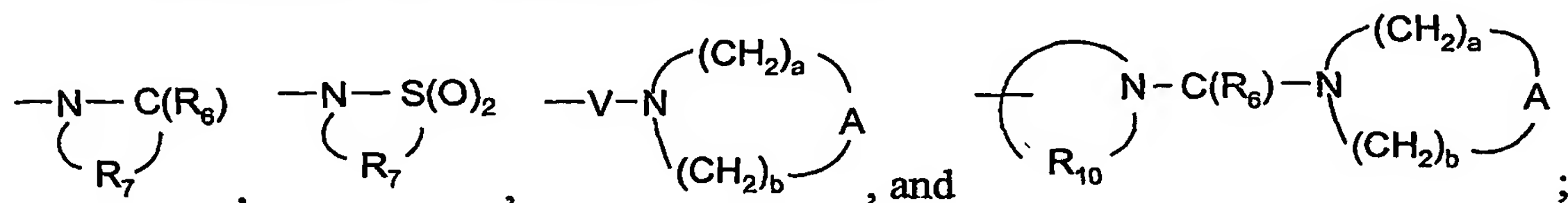


20                    R<sub>3</sub> is hydrogen or C<sub>1-10</sub> alkyl;

R<sub>4</sub> is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, aryl, arylalkylenyl, aryloxyalkylenyl, alkylarylenyl, heteroaryl, heteroarylalkylenyl, heteroaryloxyalkylenyl, alkylheteroarylenyl, and heterocyclyl, wherein the alkyl, alkenyl, alkynyl, aryl, arylalkylenyl, aryloxyalkylenyl, alkylarylenyl, heteroaryl,

heteroarylalkylenyl, heteroaryloxyalkylenyl, alkylheteroarylenyl, and heterocyclyl groups can be unsubstituted or substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, hydroxyalkyl, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, mercapto, cyano, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, amino, alkylamino, dialkylamino, (dialkylamino)alkyleneoxy, and in the case of alkyl, alkenyl, alkynyl, and heterocyclyl, oxo;

$R_5$  is selected from the group consisting of



$R_6$  is selected from the group consisting of =O and =S;

$R_7$  is  $C_{2-7}$  alkylene;

$R_8$  is selected from the group consisting of hydrogen, alkyl, alkoxyalkylenyl, and arylalkylenyl;

$R_9$  is selected from the group consisting of hydrogen and alkyl;

$R_{10}$  is  $C_{3-8}$  alkylene;

A is selected from the group consisting of -O-, -C(O)-, -S(O)<sub>0-2</sub>-, -CH<sub>2</sub>-, and -N(R<sub>4</sub>)-;

Q is selected from the group consisting of a bond, -C(R<sub>6</sub>)-, -C(R<sub>6</sub>)-C(R<sub>6</sub>)-, -S(O)<sub>2</sub>-, -C(R<sub>6</sub>)-N(R<sub>8</sub>)-W-, -S(O)<sub>2</sub>-N(R<sub>8</sub>)-, -C(R<sub>6</sub>)-O-, and -C(R<sub>6</sub>)-N(OR<sub>9</sub>)-;

V is selected from the group consisting of -C(R<sub>6</sub>)-, -O-C(R<sub>6</sub>)-, -N(R<sub>8</sub>)-C(R<sub>6</sub>)-, and -S(O)<sub>2</sub>-;

W is selected from the group consisting of a bond, -C(O)-, and -S(O)<sub>2</sub>-;

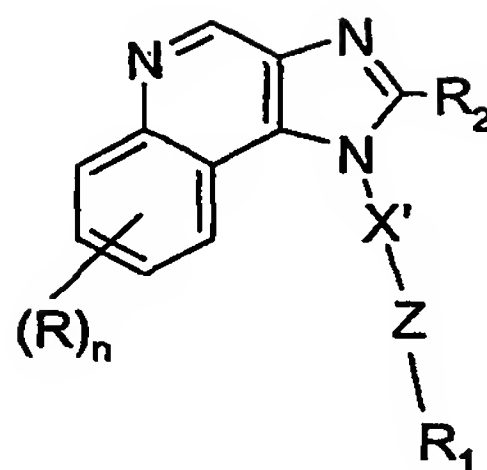
a and b are independently integers from 1 to 6 with the proviso that  $a + b \leq 7$ ;

R is selected from the group consisting of alkyl, alkoxy, hydroxy, halogen, and trifluoromethyl; and

n is 0 or 1;

or a pharmaceutically acceptable salt thereof.

18. A compound of the formula (IV):



(IV)

wherein:

Z is -CH=CH- or -C≡C-;

X' is -CH(R<sub>3</sub>)-, -CH(R<sub>3</sub>)-alkylene-, or -CH(R<sub>3</sub>)-alkenylene-;

R<sub>1</sub> is selected from the group consisting of:

-Ar,

-Ar'-Y-R<sub>4</sub>,

-Ar'-X-Y-R<sub>4</sub>, and

-Ar'-R<sub>5</sub>;

Ar is selected from the group consisting of aryl and heteroaryl both of which can be unsubstituted or can be substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, hydroxyalkyl, mercapto, cyano, carboxy, formyl, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, heterocyclalkylenyl, amino, alkylamino, and dialkylamino;

Ar' is selected from the group consisting of arylene and heteroarylene both of which can be unsubstituted or can be substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, hydroxyalkyl, mercapto, cyano, carboxy, formyl, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, heterocyclalkylenyl, amino, alkylamino, and dialkylamino;

R<sub>2</sub> is selected from the group consisting of:

-R<sub>4</sub>,

-X-R<sub>4</sub>,

-X-Y-R<sub>4</sub>, and

-X-R<sub>5</sub>;

X is selected from the group consisting of alkylene, alkenylene, alkynylene, arylene, heteroarylene, and heterocyclylene wherein the alkylene, alkenylene, and alkynylene groups can be optionally interrupted or terminated with arylene, heteroarylene, or heterocyclylene, and wherein the alkylene, alkenylene, and alkynylene groups can be optionally interrupted by one or more -O- groups;

Y is selected from the group consisting of:

-S(O)<sub>0-2</sub>-,

-S(O)<sub>2</sub>-N(R<sub>8</sub>)-,

-C(R<sub>6</sub>)-,

-C(R<sub>6</sub>)-O-,

-O-C(R<sub>6</sub>)-,

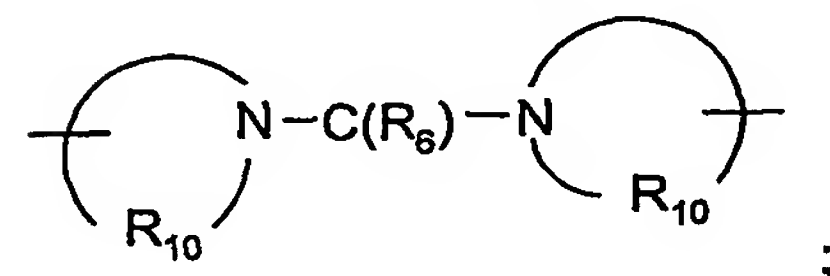
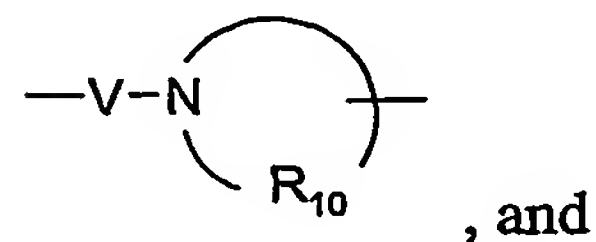
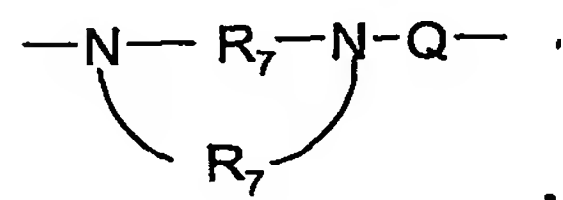
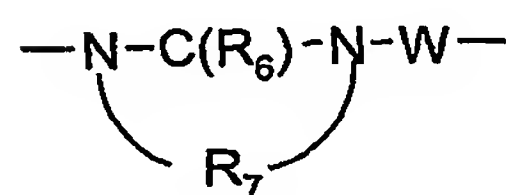
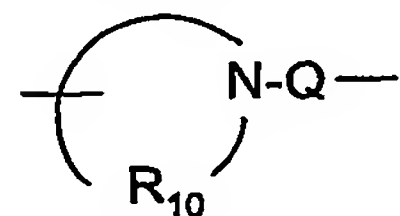
-O-C(O)-O-,

-N(R<sub>8</sub>)-Q-,

-C(R<sub>6</sub>)-N(R<sub>8</sub>)-,

-O-C(R<sub>6</sub>)-N(R<sub>8</sub>)-,

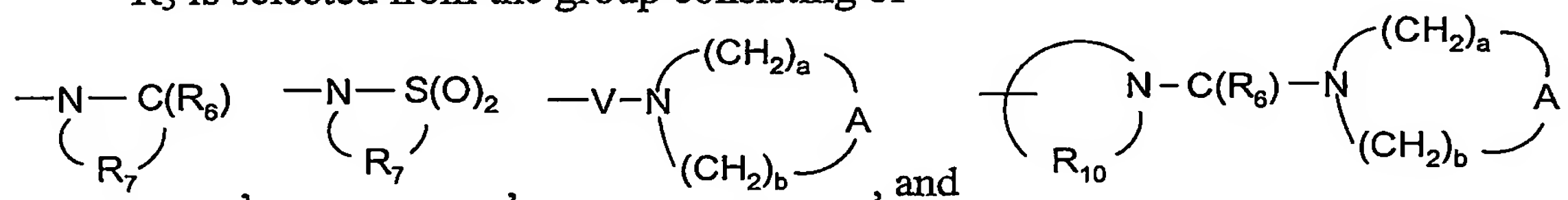
-C(R<sub>6</sub>)-N(OR<sub>9</sub>)-,



R<sub>3</sub> is hydrogen or C<sub>1-10</sub> alkyl;

$R_4$  is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, aryl, arylalkylenyl, aryloxyalkylenyl, alkylarylenyl, heteroaryl, heteroarylalkylenyl, heteroaryloxyalkylenyl, alkylheteroarylenyl, and heterocyclyl, wherein the alkyl, alkenyl, alkynyl, aryl, arylalkylenyl, aryloxyalkylenyl, alkylarylenyl, heteroaryl, heteroarylalkylenyl, heteroaryloxyalkylenyl, alkylheteroarylenyl, and heterocyclyl groups can be unsubstituted or substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, hydroxyalkyl, haloalkyl, haloalkoxy, halogen, nitro, hydroxy, mercapto, cyano, aryl, aryloxy, arylalkyleneoxy, heteroaryl, heteroaryloxy, heteroarylalkyleneoxy, heterocyclyl, amino, alkylamino, dialkylamino, (dialkylamino)alkyleneoxy, and in the case of alkyl, alkenyl, alkynyl, and heterocyclyl, oxo;

$R_5$  is selected from the group consisting of



$R_6$  is selected from the group consisting of =O and =S;

$R_7$  is  $C_{2-7}$  alkylene;

$R_8$  is selected from the group consisting of hydrogen, alkyl, alkoxyalkylenyl, and arylalkylenyl;

$R_9$  is selected from the group consisting of hydrogen and alkyl;

$R_{10}$  is  $C_{3-8}$  alkylene;

A is selected from the group consisting of -O-, -C(O)-, -S(O)<sub>0-2</sub>-, -CH<sub>2</sub>-, and -N( $R_4$ )-;

Q is selected from the group consisting of a bond, -C( $R_6$ )-, -C( $R_6$ )-C( $R_6$ )-, -S(O)<sub>2</sub>-, -C( $R_6$ )-N( $R_8$ )-W-, -S(O)<sub>2</sub>-N( $R_8$ )-, -C( $R_6$ )-O-, and -C( $R_6$ )-N(OR<sub>9</sub>)-;

V is selected from the group consisting of -C( $R_6$ )-, -O-C( $R_6$ )-, -N( $R_8$ )-C( $R_6$ )-, and -S(O)<sub>2</sub>-;

W is selected from the group consisting of a bond, -C(O)-, and -S(O)<sub>2</sub>-;

a and b are independently integers from 1 to 6 with the proviso that  $a + b \leq 7$ ;

R is selected from the group consisting of alkyl, alkoxy, hydroxy, halogen, and trifluoromethyl; and

n is 0 or 1;

or a pharmaceutically acceptable salt thereof.